

Letter to the Editor

A Simple Device for Visualising Pain During Surgical Procedures Under Monitored Anesthesia Care

Increasingly more surgical procedures are carried out using local anaesthetics (LA) combined with light sedation [1]. In many out-of-hospital clinics, no anaesthesiologist is available, but in a hospital setting the practise of monitored anaesthesia care is often preferred. The surgeon infiltrates skin and deeper structures with a local anaesthetic prior to the procedure and the role of the anaesthesiology department has become one of monitoring vital signs and keeping the patient comfortable through verbal contact and reassurance [2]. Pain relief is often provided only by the use of LA and sedation with a short-acting benzodiazepine sometimes supported by a subanaesthetic infusion of Propofol. With this technique many patients are kept comfortable, but unfortunately many patients may experience moderate to severe intraoperative pain.

In the increasingly popular procedure of percutaneous laser disc surgery, the surgeon requires the patient to be "awake" and responsive to any root pain accidentally elicited. The procedure involves after skin and subcutaneous infiltration with LA, an initial insertion of needles of 18–20 G size, followed by laser ablation. During the laser procedure, heat and vapour build up inside the disc with a resulting increased intradiscal pressure and often reporting of moderate to severe pain by the patient [3].

In order further to localise the critical points of the procedure where pain is elicited, we found it of interest to be able to provide an on-line and "objective" measure of the patient's discomfort to the operator. We have developed a simple setup for visualising the pain on-line (i.e., an algometer device).

A pressure transducer (Baxter Uniflow™ Disposable, Baxter, CA) is connected to a saline bag, arterial pressure tubing, and a 3-way stopcock. A 250 ml saline bag is pre-filled to 400 ml. The transducer signal from manual pressure of the bag is transmitted to a monitor (Tramscope

12C, Marquette Electronics, Milwaukee, WI), zeroed and arbitrarily set to a range of 0–300 mmHg. The 400 ml bag is placed in the hand of the patient, who is instructed prior to the procedure to press the bag at any pain (Fig 1).

As a result of having used this setup for more than a year, we have been able to identify the most painful parts of the laser discectomy procedure. On introducing the needles, pain was elicited from deeper structures where local anaesthetic had obviously not been introduced in adequate quantity and also the timing of the delivery of LA to needle introduction has been emerging as an area of concern. Often the surgeon would allow too little time (1–2 minutes) to intervene after LA infiltration to the actual introduction of the needle. During deliveries of the laser energy (Nd:Yag at 1 sec pulses, 15 Watt and 1,600–2,000 Joules), more frequent halts and suction evacuation of the vapour generated were found to reduce discomfort (i.e., feeling of pressure) considerably.

Thus we have as a team been able to revise the procedure, e.g., more time to elapse from LA infiltration to needle insertion, introduction of a

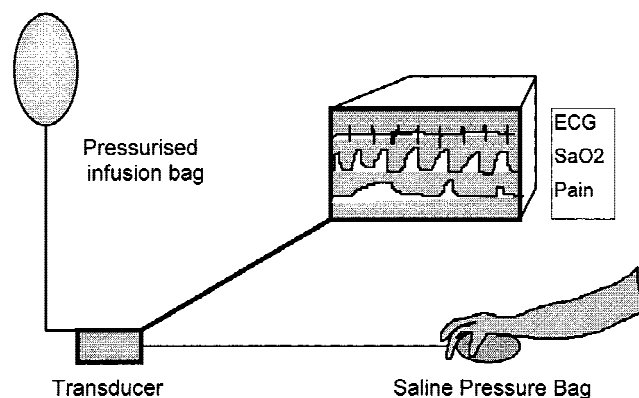


Fig. 1. A pressure transducer is connected to a pressurised saline bag, an arterial pressure tubing and a 3-way stopcock. A 250 ml infusion bag is pre-filled to 400 ml. The transducer signal from manual pressure of the bag is transmitted to a monitor zeroed and arbitrarily set to a range of 0–300 mmHg. The 400 ml bag is placed in the hand of the patient, who is instructed prior to the procedure, to squeeze the bag at any pain.

second LA infiltration in the depth close to the disc before further advancing, and finally more frequent vapour evacuation.

The method has been easy to introduce to the patients, and compliance is high. Patient satisfaction is comparable to reports on Patient Controlled Analgesia (PCA) as the patient feels encouraged to report his/her pain freely. An occasional patient may have been too sedated to respond appropriately, and the method is then obviously not applicable. This has taught us to titrate our sedation more appropriately.

In conclusion, we have, by means of a simple and readily available setup, been able to make procedural pain visible to the operator ("on-line algometry"). This has led to adjustments in the operative as well as in the anaesthetic procedure, reducing patient discomfort and increasing patient satisfaction.

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